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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,432	03/31/2004	Peter Feldmann	YOR920040053US1	7656
29683	7590	07/13/2007		
HARRINGTON & SMITH, PC 4 RESEARCH DRIVE SHELTON, CT 06484-6212			EXAMINER SHARON, AYAL I	
			ART UNIT 2123	PAPER NUMBER
			MAIL DATE 07/13/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Interview Summary

**Application No.**

10/815,432

**Applicant(s)**

FELDMANN ET AL.

**Examiner**

Ayal I. Sharon

**Art Unit**

2123

All participants (applicant, applicant's representative, PTO personnel):

(1) Ayal I. Sharon (Examiner). (3) \_\_\_\_\_.

(2) Robert Mauri (Applicant's Representative). (4) \_\_\_\_\_.

Date of Interview: 06 July 2007.

Type: a) ☒ Telephonic b) ☐ Video Conference  
c) ☐ Personal [copy given to: 1) ☐ applicant 2) ☐ applicant's representative]

Exhibit shown or demonstration conducted: d) ☐ Yes e) ☒ No.

If Yes, brief description: \_\_\_\_\_.

Claim(s) discussed: 1.

Identification of prior art discussed: None.

Agreement with respect to the claims f) ☐ was reached. g) ☒ was not reached. h) ☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: Examiner indicated to Applicant's Representative, Mr. Robert Mauri, that the proposed amendments (see attached) would require a further search. Examiner also indicated that the proposed amendments would not overcome the 35 USC 101 rejections due to preemption of all possible "substantial practical applications" of the claimed math.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN A NON-EXTENDABLE PERIOD OF THE LONGER OF ONE MONTH OR THIRTY DAYS FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

Ayal Sharon  
Examiner's signature, if required

## Summary of Record of Interview Requirements

### Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

### Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews

#### Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

#### 37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,  
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

### Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

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**Harrington & Smith, PC**

# Fax

<b>To:</b> Examiner Ayal Sharon	<b>From:</b> Robert Mauri
<b>Fax:</b> (571) 273-3714	<b>Pages:</b> Three, including cover
<b>Phone:</b> (571) 272-3714	<b>Date:</b> 6/28/2007
<b>Re:</b> Amendments to claim 1 in 10/815,432	<b>CC:</b> None

☐ Urgent    ☐ For Review    ☐ Please Comment    ☐ Please Reply    ☐ Please Recycle

Dear Examiner Sharon:

Enclosed is a proposed amendment to claim 1. Please call me at 203-925-9400, ext. 23, or email me at [rmauri@hspatent.com](mailto:rmauri@hspatent.com) to set up a time/date to discuss this. Thank you.

Robert Mauri  
41,180

**CONFIDENTIALITY NOTICE:** This fax transmission (and/or the attachments accompanying it) may contain confidential information belonging to the sender which is protected by attorney-client privilege. The information is only for the use of the intended recipient. If you are not the intended recipient, you are hereby notified that any disclosure, copying, distribution or the taking of any action in reliance on the contents of this information is strictly prohibited. Any unauthorized interception of this transmission is illegal under the law. If you have received this transmission in error, we would appreciate your promptly notifying the sender, and then please destroy all copies of the transmission.

S.N. 10/815,432  
Art Unit: 2123

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IN THE CLAIMS

1. (Currently Amended) A method to determine a numerical solution of a linear system of equations representing a physical entity, comprising:

generating a mesh representation of the physical entity, the mesh representation comprising mesh elements;

computing a linear system matrix  $A$  of coefficients by computing interactions between simple functions defined over sets of mesh elements;

partitioning the mesh representation into a plurality of partitions separated by partition boundaries;

computing, using at least the plurality of partitions, a preconditioner for the linear system matrix  $A$  that is compatible with the linear system of equations and that provides at least basis function support over at least two mesh elements, where coupling of the preconditioner between partitions is only through basis functions at the partition boundaries, where computing a preconditioner operates to compute a preconditioning matrix  $K$  where partition boundaries are constrained to coincide with the edges of mesh elements, and to compute mesh element interactions using reduced coupling, here mesh element interactions between basis functions are computed only for half functions within the same partition, where a half function denotes the function over any one of multiple mesh elements for which it is defined, and where the interactions of basis functions crossing a partition boundary are computed separately for each of the half functions such that no interactions exist between basis function halves that are defined in separate ones of the partitions, and those basis functions completely within a partition, referred to as interior elements, interact only with other interior elements and with boundary element halves within the same partition; and

using at least the linear system matrix  $A$  and the preconditioner, determining an approximate numerical solution of the linear system of equations; and

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outputting the approximate numerical solution.

2. (Original) A method as in claim 1, where the preconditioner is itself a valid solution to the same set of physical equations that govern the full linear system.

3. (Canceled)

4. (Canceled)

5. (Original) A method as in claim 4, further comprising sorting indices of basis functions in the matrices  $A$  and  $K$  so that all internal elements appear first, grouped according to their respective partitions, followed by all boundary elements, and where a resulting preconditioning matrix  $K$  for  $n$  partitions has the form:

$$K = \begin{bmatrix} [Ka_1] & & & & \\ & [Ka_2] & & & \\ & & \ddots & & \\ & & & [Ka_n] & \\ & & & & [Kd] \\ & [Kc] & & & \end{bmatrix},$$

where the sub matrix  $Ka$  is the block diagonal matrix created by the union of the matrices of internal element interactions  $Ka_1$  through  $Ka_n$ ,  $Kd$  represents the interactions between the boundary elements, and  $Kb$  and  $Kc$  are the interactions between the internal and boundary elements.

6. (Previously Presented) A method as in claim 5, wherein determining an approximate numerical solution further comprises iteratively solving a system of equations  $Ax=f$  using the

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